



SUGAR & HEALTH

NORDIC SUGAR



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Interest in health is greater than ever. Almost every day you can read about health in the media: new studies are reported; experts give their opinions; facts and figures are reproduced; and there is no shortage of people telling you how they found the way to a healthier life.

The health debate has many aspects, but not all of them are equally well informed scientifically. We would like to do something about that. With this folder we are therefore seeking to shed light on typical questions about sugar in order to contribute to a more balanced debate.

Happy reading!



Nordic Sugar
Member of Nordzucker Group



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If you would like to read more about sugar and nutrition, please visit our website www.perspektiv.nu.
The website also lists scientific references for the topics discussed in this folder.**

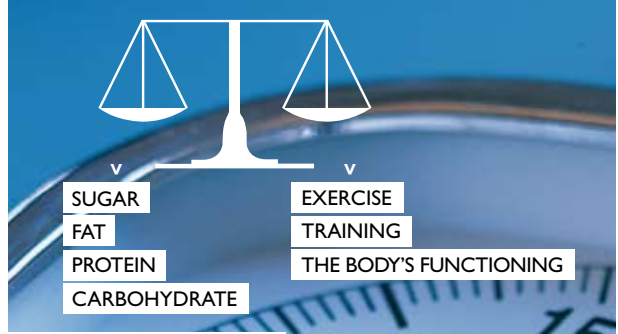
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IS SUGAR FATTENING?

Yes ... and no. Yes because sugar contains energy, and if you take in more energy than your body expends during the course of the day, over time you will become obese. No because sugar in itself is no more fattening than other food substances – in fact, 1 g sugar contains half as many calories as 1 g fat. In other words, all food substances are fattening if you consume more of them than you need. The development of obesity is a question of total energy intake in relation to total energy expenditure – also known as energy balance.

The development of obesity is the result of an interaction between a number of factors such as genetic disposition, eating and exercise habits, and psychosocial aspects. Furthermore, the research indicates that obesity also has a social lopsidedness. All of this – and much more – must be taken into consideration if we are to solve the problems of obesity. Unfortunately, it is not enough to just focus on any one factor such as the sugar content of different products or the number of hours of PE on the school timetable. ■

ENERGY CONTENT PER GRAM

Fat	38 kJ (9 calories)
Protein	17 kJ (4 calories)
Carbohydrate	17 kJ (4 calories)
Sugar	17 kJ (4 calories)

ARE WE EATING MORE SUGAR THAN WE USED TO?



The debate can give the impression that we are eating more sugar than we used to, but the statistics tell a different story.

According to the supply statistics we have an EU average of 36 kg sugar available per person per year – and this has remained relatively stable for the last 40 years (see graph on next page).

By comparison, national dietary surveys show a lower figure. However, meaningful data measuring the actual sugar(s) “consumption” by means of dietary surveys is difficult to obtain. First of all, the availability of such data varies a lot among EU countries. Where intake data exists, it is limited by the fact that there is no standardised method for collecting intake data across Europe.

Various intake figures are not comparable due to the use of different data sources and methodologies across countries. Some dietary surveys have high levels of misreporting. Data has been collected at various time points, and is not consistent in its reporting of total sugars, added sugars and sucrose. Intake data is often not nationally representative.

The actual sugar consumption is probably below 36 kg on EU average because wastage accounts for a large proportion of the supply statistics and consumption. However, we must be aware that this is the average figure. The consumption is not evenly distributed. Some groups, especially among children and young people, have a higher sugar intake than others.

See illustration: EU average sugar supply over the past 40 years (kilos/head/year)
- next page >

HOW SUGAR INTAKE IS CALCULATED

There are two methods of calculating sugar intake.

The first method is dietary surveys

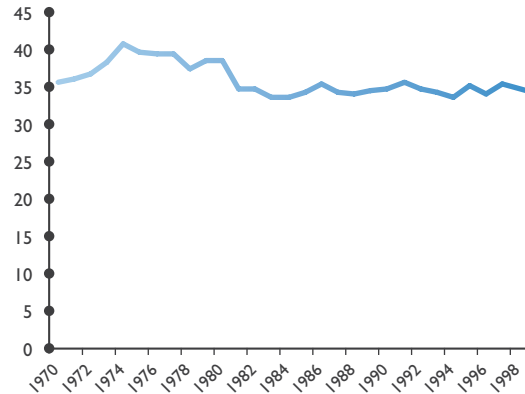
In this method selected persons are asked what they have eaten during the course of, for example, a week. The disadvantage of this type of survey is that people claim – deliberately or non-deliberately – less than they have actually eaten with regard to sweets, cakes and similar products. It is therefore likely that the actual intake of sugar is higher than the dietary surveys indicate.

The second calculation method is supply statistics

This method looks at how much sugar is available to industry and households, and hence consumers. The starting point is the country's production of sugar, adjusted for imports and exports respectively, either directly or as sugar content in end products. The result is divided by the number of citizens and gives the amount of sugar that is available to each consumer. The disadvantage of this method is that it does not take into account wastage, i.e. all the food products and food leftovers that are thrown away by shops, restaurants and private homes. Some surveys suggest that up to 20-30% of our food goes to waste. This means that the actual intake will usually be less than that shown by the supply statistics ■



EU AVERAGE SUGAR SUPPLY OVER THE PAST 40 (KILOS/HEAD/YEAR)



Source: EUROSTAT



IS SUGAR UNHEALTHY?

Opinion on this is undoubtedly divided. At Nordic Sugar we do not believe that it is possible to just talk about healthy and unhealthy foods – it is more about looking at eating habits as a whole and therefore talking about healthy and unhealthy eating habits.

Sugar does not contain vitamins or minerals. It is not therefore healthy in itself. However, we eat very little sugar in pure form. Sugar is used, for example, to improve the taste of products that are rich in starch and dietary fibre. In this way sugar can help to ensure that we get the necessary vitamins and minerals.

If we follow the general nutrition recommendations and have a varied diet, sugar and sugar-containing food can certainly be included in a healthy diet. On the other hand, if we have narrow eating habits and our intake of sugar is so high that it replaces other important food substances, it could be said that sugar is unhealthy. Studies have shown that people with a moderate sugar intake are rarely deficient in vitamins and minerals ■

YEARS







IS SUGAR “EMPTY CALORIES”?

The term “empty calories” refers to either fat or sugar in a food that has zero, or very limited, nutritional value, for example fizzy drinks, sweets, crisps, butter or cakes. These foods contain energy but, generally speaking, no vitamins or minerals.

Whether sugar is empty calories therefore depends on the composition of the foodstuff or meal ■

The great taste of sugar often improves the taste of foods that are rich in starch and fibre. Studies have shown that people with a moderate sugar intake are rarely deficient in vitamins and minerals.

DOES SUGAR CAUSE DENTAL CARIES?

Cavities in the teeth (caries) are the result of acid attacking the tooth enamel. The acid is formed when bacteria in the mouth break down the carbohydrates in food. The bacteria occur normally in the mouth and form a thin layer of plaque on the teeth. Plaque builds up on clean teeth even if there is no food in the mouth, but carbohydrate-containing foods, including sugar and starch, promote the formation of plaque. The amount of plaque and its composition affect the caries process. The longer the plaque and carbohydrate-containing food are in the mouth, the greater the risk of caries. Poor oral hygiene also increases the risk of cavities developing in your teeth, and the frequency of intake of sugar and starch is of greater relevance for the development of cavities in your teeth than the amount. Sugar can certainly therefore produce cavities in your teeth, but it does not necessarily do so.

The development of caries is an interaction between several factors, including genetic disposition, diet, mealtime frequency and oral hygiene. For example, the amount and composition of saliva are relevant for the development of caries.

Daily teeth-brushing with fluoride has been proven to reduce the risk of cavities. It is vital for the development of a child's dental health. In spite of the fact that the sugar supply has generally been the same for 50 years, the incidence of dental caries in 12-year-olds has decreased precipitously since 1970 ■

See table: Dental caries in 12-year-old children in various EU Member States in 1970s/1980s and in 2006





DENTAL CARIES IN 12-YEAR-OLD CHILDREN IN VARIOUS EU MEMBER STATES IN 1970S/1980S AND IN 2006

Decayed, missing and filled teeth (DMFT)

	1970/1980S	2006
AUSTRIA	4.3	1.0
BELGIUM	3.9	1.1
DENMARK	6.4	0.8
FINLAND	6.9	1.2
FRANCE	3.5	1.2
GERMANY	6.0	0.7
GREECE	3.8	2.2
IRELAND	5.4	1.1
ITALY	6.9	1.1
LUXEMBOURG	3.9	0.7
NETHERLANDS	7.8	0.8
NORWAY	8.4	1.7
PORTUGAL	4.6	1.5
SPAIN	4.2	1.1
SWEDEN	7.8	1.0
SWITZERLAND	6.1	0.9
UK	4.7	0.7

Source: WHO Europe. Health for all Database & WHO Oral Health Country/Area Programmes, www.collab.od.mah.se



CAN YOU GET **DIABETES** FROM EATING SUGAR?

Many people believe that sugar causes diabetes. This comes from the fact that the disease manifests itself through an elevated content of sugar in the blood. Like fat, protein and other carbohydrates, sugar provides energy. If you take in more energy than your body expends, over time you will become obese, which is a major risk factor for developing type 2 diabetes.

Type 2 diabetes is a so-called "lifestyle disease". This means that the development of the disease is closely linked to the individual's lifestyle as a whole. The biggest risk factors for developing type 2 diabetes are obesity, insufficient exercise, genetic disposition and age. Type 2 diabetes develops over time when the body can no longer produce enough insulin and/or has a reduced ability to respond to insulin. Type 1 diabetes occurs when the body has lost the ability to produce insulin and is not caused by lifestyle.

A small amount of sugar in a meal does not produce an increase in the blood sugar level. Diabetics can therefore replace some of the fat or carbohydrate in food with 5-10 g sugar per meal without risk ■

In 2007, it is estimated that there were 246 million people with diabetes in the adult population in the seven regions of the International Diabetes Federation (IDF). In 2007, it is estimated that 6.0% of adults aged 20-79 in all IDF member countries had diabetes. In 2003, the total was 194 million.

Source: *International Diabetes Federation 2009, www.idf.org*



DOES SUGAR CAUSE MAJOR BLOOD SUGAR SWINGS?

Taking in carbohydrate – including sugar – causes the blood sugar level to increase. But even though many people believe otherwise, sugar is not actually one of the carbohydrates that causes the greatest blood sugar increase. This is because sugar is a combination of glucose and fructose; whereas glucose (also called “grape sugar”) gives a large blood sugar increase, fructose (also called “fruit sugar”) only gives a small increase (see table).

GI stands for “glycemic index” and expresses how quickly the carbohydrates in a given food are absorbed into the blood. A high GI indicates that the food gives a large blood sugar increase. It is beneficial to eat a large proportion of foods with low GI because a stable blood sugar level makes you feel full for longer.

Sugar has an average GI, but the individual food's GI is not the only factor influencing blood sugar level. It is also affected by the total amount of carbohydrates that we eat and the composition of the meal in general ■





GLYCEMIC INDEX (GI)

Foods classified according to their influence on blood sugar (glycemic index)

HIGH	MEDIUM	LOW
White bread	Rice	Rye bread, wholemeal
White rice	Pasta	Pulses
Cornflakes	Orange	Grapefruit
Boiled potatoes	Green peas	Apple
Raisins	Grapes	Milk
Glucose	Sugar	Fructose





DOES SUGAR MAKE CHILDREN **HYPERACTIVE?**

Although it is often claimed in the media and in debate that there is a link between sugar intake and hyperactivity in children, there is nothing in either national or international research to indicate this.

Instead, experts suggest that the improvement that takes place in some children when a high-sugar diet is replaced with e.g. fruit, vegetables and high-fibre cereal products is actually due to the fixed limits. Added to this are the regular, healthier meal patterns that are generally associated with a change in eating habits ■





CAN YOU BECOME **ADDICTED** TO SUGAR?

There is no scientific evidence that sugar intake can cause symptoms of physical addiction. These include, for example, the withdrawal symptoms that are characteristic of intoxicants such as alcohol and narcotics.

However, this does not mean that some people may not have a greater appetite for sugar-containing and fatty foods than others, while others seek comfort in food that tastes good – including sugar-containing products – and thus feel a form of psychological addiction ■



A close-up photograph of brown sugar crystals, showing their granular texture and light brown color. The crystals are piled up, with some in sharp focus in the foreground and others blurred in the background. The lighting is soft, highlighting the natural sheen of the sugar.

IS BROWN SUGAR HEALTHIER THAN WHITE SUGAR?

Neither white nor brown cane sugar has a significant content of vitamins and minerals.

As the name suggests, brown cane sugar is obtained from sugar cane, while white sugar can be obtained from either beet or cane. Brown cane sugar products are a mixture of sugar crystals and syrup. It is the syrup that gives the cane sugar its brown colour and caramelised taste. When producing sugar from sugar beets, it is necessary to remove the syrup because it has a bitter taste.

The syrup in brown cane sugar contains small amounts of minerals. Compared with other foods, the mineral content of cane sugar is low, and the contribution to the daily recommended intake is negligible. We cannot therefore say that brown cane sugar is healthier than white sugar ■

The content of vitamins and minerals in foods – including various types of sugar – can be seen at www.foodcomp.dk - *choose the english version.*



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